

# Using Information and Communication Technology to Empower and Educate Young Person with Disability in STEM

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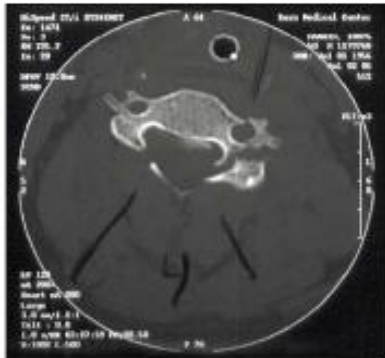
# *On the way to Death Valley, 5 years ago*



EXH.0005-A

# Completely paralyzed neck down

## Detail of Cervical Injuries - Professor Lee

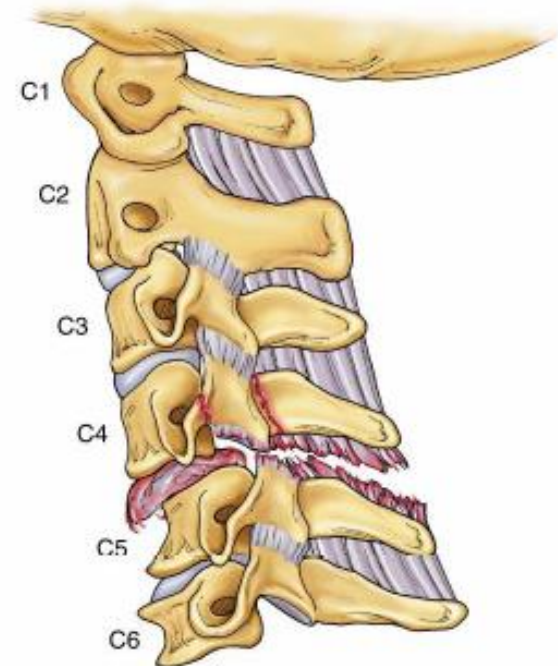


Transverse section of C4 from below



### C4-C5 fracture subluxation

- Less than 25% subluxation
- C4-5 disc space significantly widened
- Complete ligamentous disruption at C4-5 level of facet joints
- Interspinous ligament completely torn
- Longus colli muscles "hemorrhagic, edematous, and badly contused"
- C4 laminar fractures, posteriorly
- C4 spinous process "free-floating," attached to free-floating laminar section bilaterally
- Visible spinal cord superiorly
- Disc disruption, C4-5



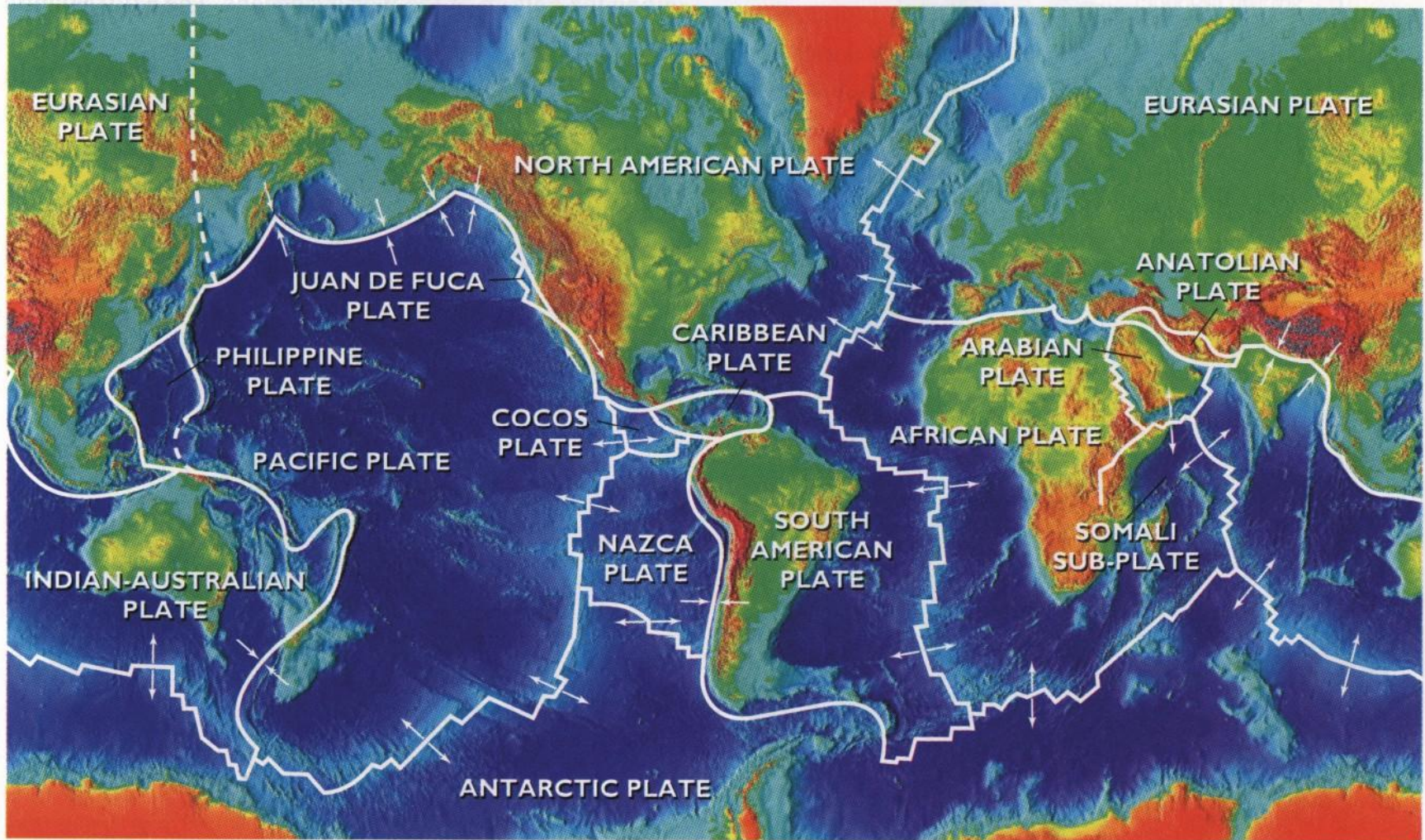
## ***My Story - Timeline***

- **Jul 2, 2006 Van rollover accident in USA**
- **Sep 22, 2006 Returns back to Korea (3 month)**
- **Jan 2, 2007 Returns back to SNU (6 month)**
- **Mar 5, 2008 Recognized by the media (20 month)**
- **Oct 1, 2008 Write a newspaper column**
- **3 weeks later, offer from the government (MKE)**
- **Jun 1, 2010 QoLT \$10 M/year program starts**

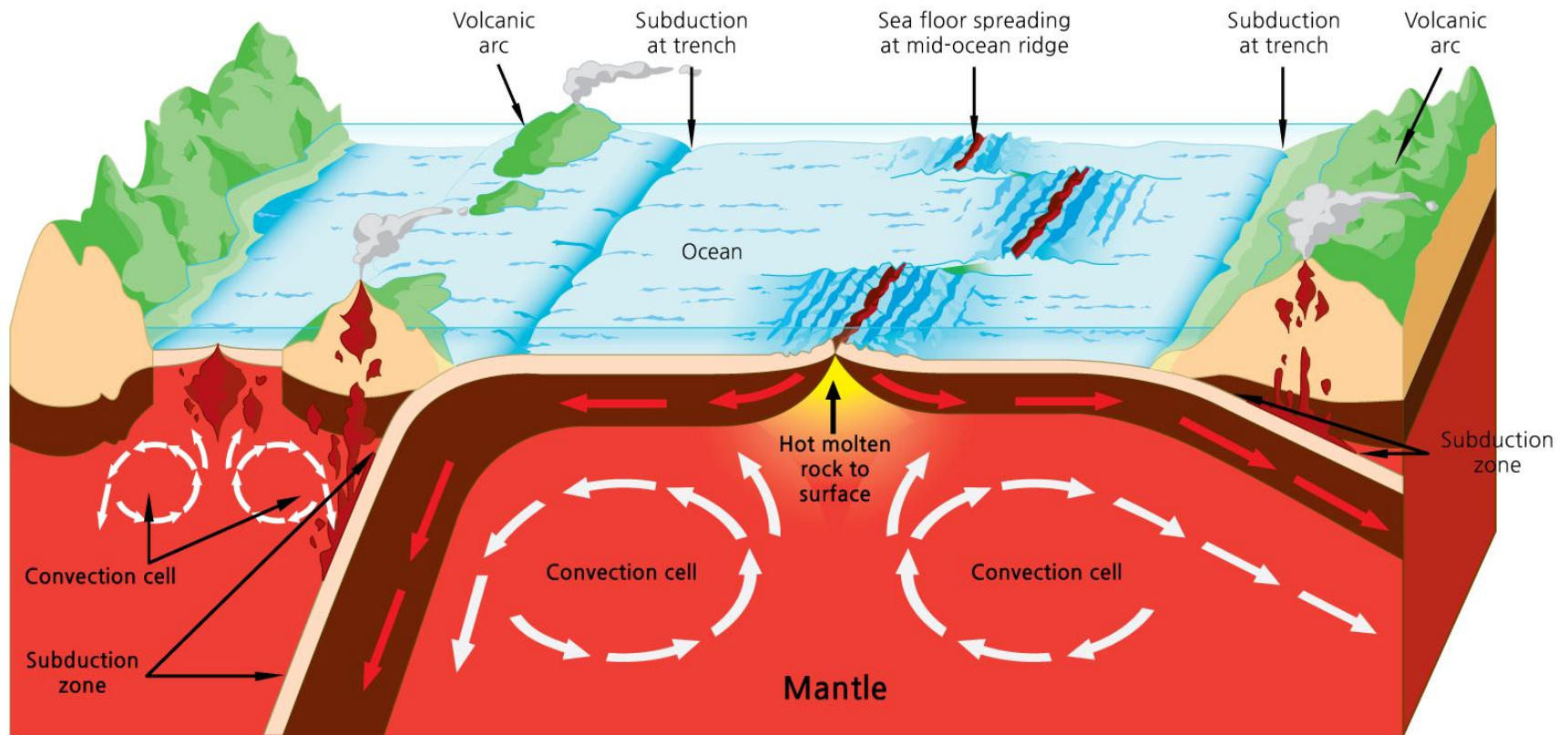
***QoLT = Quality of Life Technology***



*The surface of Earth is composed of plates that constantly move.*

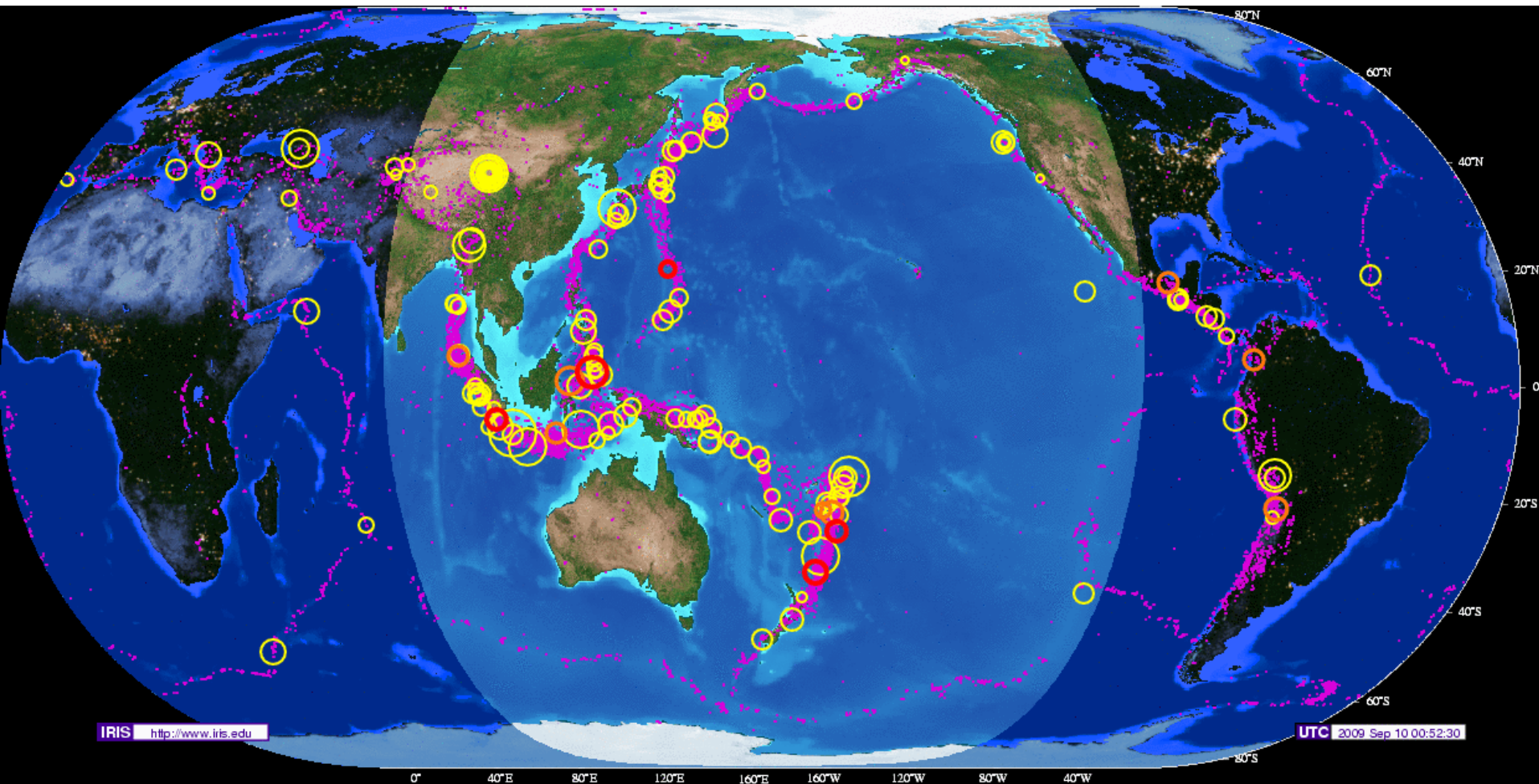


# *Plates move because of mantle convection.*





*Korea is relatively safe from earthquakes and volcanoes.*



*The only way to protect ourselves from earthquakes is to build stronger houses.*



**Special input device**  
**Speech recognition**

*“Computer is god’s gift to disabled people.”*  
*“The gap between people is reduced in cyber-space.”*

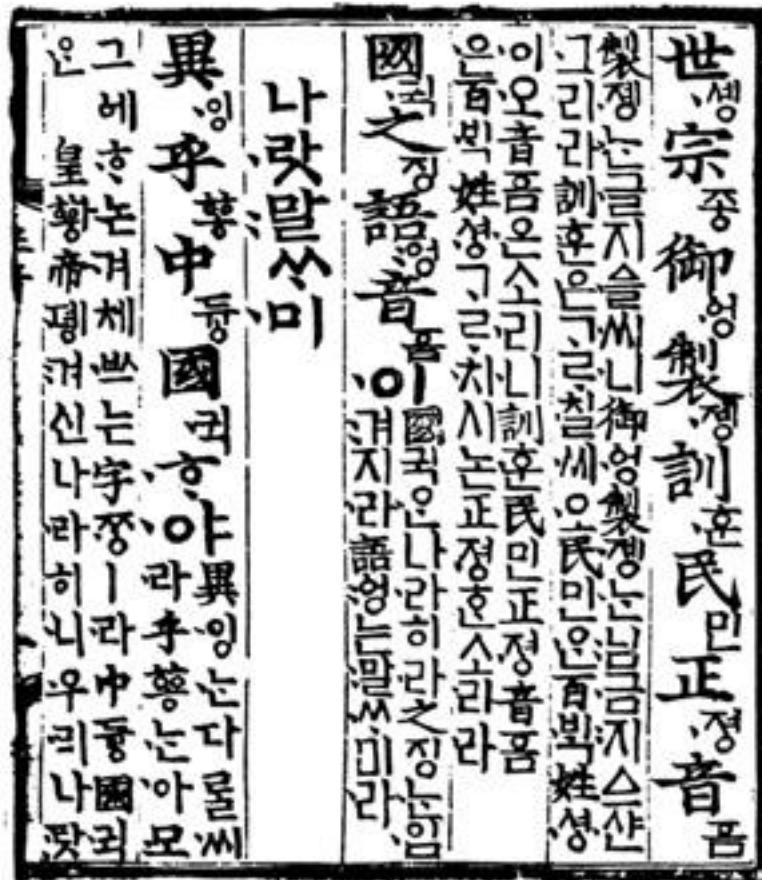
**Modified vehicle**





# Developing Korean Speech Recognition Program

## Code name : King Sejong Project



“While the scholars have no trouble expressing themselves using Chinese characters, common people find it difficult because their mother language is not Chinese.”  
(1446)

# ***Knowledge Economy***

*Today's global economy is one in transition to a Knowledge Economy, that is, an interconnected, globalized economy where knowledge resources such as know-how, expertise and intellectual property are more critical than other economic resources such as land, natural resources, or even manpower.*

Source: FRA Report



- **Korea is a country that has embraced Knowledge Economy according to others.**
- **At the center of KE is ICT.**
- **The same technology we use daily can be used to solve important problems facing our society such as inclusion and diversity.**
- ***SMART WORK & SMART EDUCATION***
- **“Korea is the only country that has emerged from the recipient status to become a benefactor.”**

# Quality of Life Technology

## Research and Development

- Accessible vehicles
- Personalized cellphones and software
- Exercise and health monitoring devices
- Exoskeleton robots
- Korean speech recognition and AACs

## Infrastructure and Human Development

- Making role models and AT developers
- Higher education in STEM
- Computational sciences for public safety
- Rehabilitation Science and Engineering
- Global Inclusive Leadership Program





*Controlling IPTV with sip-and-puff mouse*



*Using touch screen device with sip-and-puff mouse*

# Areas of Focus

- **Global Inclusive Leadership Program (Pre-college, beginning in 2013) – 3<sup>rd</sup> Next Decade**
- **Undergraduate Computational Sciences Program**
- **Graduate RSE Program (MS, PhD)**
- **UX/UI center (HW/SW)**
- **LMS, portal, on-line education service**
- **Customized AT production RP service**



# 3 Stages/Components of Rehabilitation

- **Medical**
- **Societal**
  - Education, Jobs, Inclusion etc
- **Spiritual**
  - Being appreciative and grateful to what have*

**“If you want to go quickly,  
go alone,  
but if you want go far distance,  
go together”**

**– *Korean proverb***

**Thanks for your attention.**

